MA3026: DISCRETE MATHEMATICS

Most recently used text: *Discrete Mathematics and Its Applications*, 4th edition, Kenneth H. Rosen, McGraw-Hill 1999.

This is a second course in discrete mathematics. The first course that most students will have taken is MA1025 (or MAR125). We build on the techniques acquired in that first course, exploring both familiar and unfamiliar subject areas. We continue with enumerative combinatorics, encountering some more advanced techniques. The concept of function is extended to the more general concept of relation. We encounter combinatorial structures through our coverage of graphs and trees, with emphasis on their relevance to computation.

Hours	Sections	Topics
3-3	4.6, 4.7	Counting: Generalizations of Permutations/Combinations
4-7	5.1–5.3	Counting: Recurrence Relations
3-10	5.4,5.5	Counting: Inclusion/Exclusion
3-13	6.1, 6.2	Relations: Binary, n-ary
4-17	6.3–6.5	Relations: Representation, Closures, Equivalences
2-19	6.6	Relations: Partial Orders
2-21	7.1, 7.2	Graphs: Introduction, Terminology
4-25	7.3, 7.4	Graphs: Representation, Isomorphism, Connectivity
4-29	7.5,7.6	Graphs: Euler/Hamilton Paths, Shortest Path Problems
4-33	7.7,7.8, 8.1	Graphs: Planarity, Coloring, Introduction to Trees
4-37	8.2–8.4	Trees: Applications, Traversals
3-40	8.5,8.6	Trees: Spanning Trees, Minimum-Weight Spanning Trees
4-44		Exams, Holidays